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The efficacy of platelet gel derived from umbilical cord blood on diabetic foot ulcers: A double-blind randomized clinical trial

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ABSTRACT

Introduction: Type 2 diabetes is one of the most prevalent diseases throughout the world. The foot ulcers are severe complications of this disease. Foot ulcers induce the high rate of morbidity, impair quality of life, bring about extreme costs to health service providers, and give rise to waste of time. Recently, platelet-rich plasma (PRP) and platelet gel (PG) have been used for the treatment of chronic wounds. In the present randomized, double-blind, placebo-controlled study, platelet gel derived from umbilical cord blood (UCB) was used to heal the diabetic foot.

Method: The patients were randomly divided into three groups, under the categories of PG, platelet-poor plasma (PPP) and lubricant gel (placebo) (ratio 1:1:1). The processes of gels application were launched for the subject of each group twice per week with 3–4 days' interval. This mechanism protracted for eight weeks. After completion of 8 weeks, the patients were followed up after two weeks and then continued for nine months with one-month interval.

Result: 30 patients underwent statistical analysis. Except for diastolic blood pressure which was significant between groups, there were no statistically significant differences in patients' baseline demographics. No significant differences were detected between groups at baseline of wounds ($P = 0.09$). The results revealed that there is no statistically significant interaction among three groups during follow-up time.

Conclusion: The present study provides evidence that there are no significant differences in the size of wound among PG, PPP, and placebo groups.

1. Introduction

Type 2 diabetes are considered worldwide incidence and prevalence [1]. According to the World Health Organization (WHO), 366 million people will have been affected diabetic by 2030 [2]. Approximately 12–25 % of these afflicted patients are at risk of ulcer particularly in the extremities in their life span [2–4]. The lower limb ulcers are diabetes serious complications [3]. Foot ulcers cause significant morbidity, impair quality of life, incur high costs to health service providers and time-consuming process [4–6]. These wounds can lead to the patients' hospitalization and may result in amputation of limbs [7]. Since, the wound healing is a slow process, it often takes between 2 and 5 months and requires special treatments [8]. Holzer et al. in a retrospective analysis of costs for lower extremity ulcers in people with diabetes come to this conclusion that new treatment strategies should be developed owing to the wound treatment high medical cost [4]. Various interventional approaches have been used for the treatment of diabetes-induced ulcer. One of the treatment methods of the chronic wounds is

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